

REMARKS

Claims 1-16 are all the claims pending in the application, where claims 14-16 are added.

I. Objections to Drawings

The drawings are objected to by the Examiner for the following reasons:

The Examiner objects to the drawings under 37 C.F.R. § 1.84(p)(5) because they do not include the reference sign 31a mentioned in the description. Fig. 2 is amended to include the reference sign 31a.

The Examiner objects to the drawings under 37 C.F.R. § 1.84p(5) because they include the reference signs 4c, 22c, 1e, 35, 2, 10, and 1105a' not mentioned in the description. Applicant respectfully notes that reference signs 4c, 22c, 1e, 35 are disclosed at least in paragraphs 51, 56, 57 and 35 of the disclosure. Additionally, Applicant respectfully notes that the alleged reference signs 2 and 10, in FIGS. 12A and 14, that are objected to by the Examiner, are not reference signs. The specification clearly discloses in paragraphs 92 and 100 that the values in the figures are in units of millimeters. Actual reference signs in FIGS. 12A and 14 are differentiated by the illustrated leading lines. Lastly, paragraph 116 of the specification is amended to mention the reference sign 1105a'.

Accordingly, in view of the above, Applicant respectfully requests reconsideration and withdrawal of the objections.

II. Claim Rejections under 35 U.S.C. § 103

Claims 1, 3, 4, 6-8, 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang (U.S. Patent No. 6,359,370) in view of Bullock (U.S. Patent No. 4,140,936). Claim

5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang in view of Bullock and Sasaki et al. (U.S. Patent No. 7,067,965; hereinafter “Sasaki”). Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang in view of Bullock and Toki (U.S. Patent No. 5,856,956; hereinafter “Toki”). Claims 12 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang in view of Bullock and Ogura et al. (U.S. Patent No. 6,453,050; hereinafter “Ogura”). For at least the following reasons, Applicant respectfully traverses the rejection.

The Examiner acknowledges that Chang fails to teach or suggest the claimed feature of “a supporting member disposed around the constraint member, but not below the constraint member,” as recited in claim 1. Instead, the Examiner relies on Bullock as allegedly disclosing this claimed feature, and asserts that it would have been obvious to a person of ordinary skill in the art to combine the supporting member arrangement of Bullock with the piezoelectric actuator of Chang for the benefit of reducing the amount of material required by eliminating the bottom portion of the supporting member.

Applicant respectfully disagrees. Chang discloses that the base plate 102 (allegedly corresponding to the claimed supporting member) is shown having a lidless, box-like shape, but “the base plate 102 may have other shapes so long as the cruciform base 104 is supported laterally, and, as described below, along its underside,” (col. 4, lines 1-9). According to Chang, it is required that the base plate 102 support the cruciform base 104 along its underside. Accordingly, regardless of whether Bullock discloses the above claimed feature, Chang explicitly teaches against “a supporting member disposed around the constraint member, but not below the constraint member,” as recited in claim 1. Accordingly, Applicant respectfully

submits that it would not have been obvious to combine the supporting member arrangement of Bullock with the piezoelectric actuator of Chang, as alleged by the Examiner.

Furthermore, Chang discloses providing a piezoelectric actuator that is capable of providing up to six degrees of positioning freedom to enable adjustment of the position of various objects. Accordingly, Chang discloses a “cruciform base”, which is made of a piezo-electric material, that is supported directly on a base plate 102. More than one piezo-electric elements are combined into the cruciform base to enable deformation in various directions by driving the more than one piezo-electric elements under predetermined conditions. Additionally, the base plate is provided as a bottom plate.

In contrast, the claimed invention provides a piezo-electric actuator and an acoustic element which is capable of generating vibration at a large amplitude and of reproducing sound with high fidelity. The claimed invention recites a constraint member that constraints the piezo-electric element and beam members to amplify the amplitude of vibration. Additionally, the claimed constraint member is not supported directly on base plate, such that the claimed supporting member is no disposed below the claimed constraint member. That is, the claimed invention enables amplifying the amplitude of vibration via the mechanism of amplifying the amplitude that uses the beam members.

Thus, Applicant submits that claim 1 is patentable over the applied references. Applicant further submits that claims 3-13 are patentable at least by virtue of their dependency on claim 1.

III. New Claims


Claims 14-16 are added, support for which may be found at least in paragraphs 65, 67 and FIGS. 2-3, of the published application. Applicant respectfully submits that these claims are patentable at least by virtue of the subject matter recited therein, and at least by virtue of their dependency on claim 1.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

 #46,766
Howard L. Bernstein
Registration No. 25,665

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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